Before the

Subcommittee on Science, Technology and Space,

Senate Committee on Commerce, Science and Transportation

Written Statement
of
Kistler Aerospace Corporation

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Mr. Chairman and Members of the Subcommittee:

Good afternoon. My name is Robert Meuser. I am Senior Vice President and General Counsel for Regulatory Affairs of Kistler Aerospace Corporation.

Kistler Aerospace strongly supports the enactment of amendments to the commercial space law empowering the Federal Aviation Administration (FAA) to license re-entry operations. These amendments are an essential ingredient of a regulatory environment conducive to the development of commercial reusable aerospace vehicles like the Kistler K-1. We applaud this Subcommittee for its consideration of these important amendments.

Introduction to Kistler Aerospace

Kistler Aerospace was formed in 1993 to enter the commercial payload delivery service business. To enable commercial operations, Kistler has designed and is currently fabricating a fully reusable launch vehicle – the Kistler K-1.

Our goal is to fabricate the first K-1 vehicle and to complete our test flight program in 1998. We plan to begin commercial flight operations in 1999.

Kistler is pursuing these ambitious development goals using wholly private capital. Kistler has raised more than $200 million in private equity capital to date, and expects to raise an additional $500 million through various financial instruments.[1]

Kistler's target market for its launch services is the rapidly growing market for commercial telecommunications satellites being deployed in low earth orbit. By virtue of the K-1's full reusability, Kistler believes that it will be able to charge substantially less than prevailing Western pricing for launch services, and thereby reduce the cost of access to low earth orbit.

The commercial satellites within Kistler's target market will constitute an important segment of exciting new global telecommunications services and electronic commerce. Kistler thus hopes to become a "trucking company" for the satellite

[1] Kistler is currently a privately held corporation, but anticipates that its future financial activities eventually will require registration and disclosures under the securities laws.

infrastructure for emerging global electronic commerce.

Dr. George Mueller, former head of NASA's manned space program, is leading the K-1 design team. Dr. Mueller has assembled a team of distinguished design engineers and engineering managers responsible for the development of major space systems, including Apollo and the Space Shuttle. The Kistler contractor team includes leading American aerospace companies:

Contractor	Workscope
GenCorp Aerojet	Propulsion system
Northrop Grumman	Structures fabrication
Lockheed Martin	Fuel tanks fabrication and final vehicle assembly
Draper Laboratory	Guidance and navigation engineering; hardware-in-the-loop testing
Allied Signal	Guidance and navigation hardware and software
Irvin Aerospace	Landing systems
Oceaneering Space Systems and Textron Systems	Thermal protection systems

K-1 Aerospace Vehicle
Configuration and Operations Profile

Kistler is adapting commercial aircraft design and operating profiles to the commercial space context. When Kistler achieves its business goals, Kistler will conduct routine launch operations available to customers on short notice.

The K-1 will be a two-stage vehicle. Each stage will be fully recoverable and will land at a landing area near the Kistler launch site.

The airframe of the K-1 will be of composite materials. The K-1 will use three Russian NK-33 liquid fuel engines on the first stage and a single Russian NK-43 liquid fuel engine on the upper stage. These engines run on kerosene and liquid oxygen; when fully loaded, the K-1 will carry less kerosene than a fully loaded 747 aircraft. The avionics rely on proven technology and components, and will be fully redundant. The K-1 landing system will use parachutes and airbags for each stage.

Kistler's contractors have begun fabrication of the K-1 vehicle. Fabrication of the first vehicle is scheduled for completion in mid-1998.

Roughly two minutes into flight, the first stage engines will shut down, and the first and second stages will separate. The first stage main engine will restart, and execute a maneuver to return to the Kistler operations base.

Meanwhile, the first stage engine will ignite and propel the second stage to the customer-prescribed orbit. Approximately 24 hours from launch, the second stage will execute a de-orbit maneuver, re-enter the atmosphere and land at the same landing site near Kistler's operations base.

Kistler has determined to develop two bases for operations: one at the Nevada Test Site and the second at the Woomera Prohibited Area in Australia. Kistler believes that the market will support the operation of two sites. Moreover, two launch sites will permit Kistler to serve the broadest possible market and to hedge against technical, commercial, regulatory and other constraints that might slow or restrict Kistler's operations.

Kistler anticipates that it will conduct test flights in Australia, subject to US government export licensing and ongoing discussions with Australian government agencies. Several geographic and technical considerations favor use of the Woomera Prohibited Area for test flights.

The Nevada Test Site remains a candidate for certain test flights, although K-1 test flights in Nevada appear unlikely at this point. In either event, Kistler plans to develop the Nevada site for commercial operations by no later than 1999-2000.

Importance of Re-entry Licensing Authority

Enactment of re-entry licensing authority is critical to Kistler's proposed operations from the Nevada Test Site. Absent re-entry licensing authority, Kistler simply will be unable to secure requisite licensing to operate from its Nevada site.

The absence of essential licensing authority affects Kistler particularly in two respects:

- Kistler must begin to increase its investment in Nevada operations base to ready those facilities for either test flights in 1998 or commercial flights in 1999-2000. If this Congress does not enact re-entry licensing authority, Kistler will be forced to re-evaluate whether investments in Nevada facilities are prudent in the face of repeated failure by Congress to enact the requisite re-entry licensing authority.

- Kistler, like other new commercial space ventures, is currently raising funds from private investors. Investors actively seek explanation for, and Kistler's plans to manage licensing risks associated with, the absence of re-entry licensing authority. Uncertainty about Kistler's ability to secure licensing for re-entry operations creates uncertainty for investors considering investment in Kistler equity.

For these reasons, Kistler strongly supports the prompt enactment of amendments to the commercial space law providing re-entry licensing authority.

Comments on Pending Legislative Proposals

Kistler offers three comments on the pending legislative proposals:

- **Risk of separate licensing requirements:** The pending legislation refers to licensing of re-entry, re-entry vehicles, and re-entry sites. If these statutory references were interpreted to require a series of licenses, the pending legislation would burden the emerging commercial space industry with unnecessary and duplicative licensing requirements. The Kistler K-1, for example, will use a Kistler-owned and -operated launch and landing operations base. The vehicle, launch facilities, landing site and ground support equipment are being designed for integrated operations. A separate licensing requirement for the launch vehicle, re-entry vehicle, launch site, re-entry site would inject needless complexity, administrative costs and delay into the licensing process. Kistler accordingly urges Congress to make clear that the FAA should apply the minimum number of separate licensing requirements needed to assure safe operation of reusable aerospace vehicles.

- **Definition of "Launch":** The proposed amendment to the definition of "launch" could expose a broad range of ground activities to unnecessary and duplicative regulation. Ground operations of the K-1 are comparable to any industrial activity. Ground activities are subject to regulation under federal and state health, safety and environmental laws. Moreover, the proposed definition inversely could permit the FAA to extend the meaning of the term "launch site" to a broader range of facilities. Kistler accordingly urges Congress to make clear that activities covered by the amended definition of "launch" should be narrowly interpreted. In Kistler's view, the proposed definition should apply only to those activities immediately and directly related to launch that are not adequately addressed by existing regulatory regimes and might otherwise be conducted on the launch pad itself.

- **Definition of US commercial launch provider:** Kistler welcomes the proposed requirement to assure that the US government launch market will be open to US commercial launch providers. Kistler is concerned, however, that the definition of US commercial launch provider might have a chilling effect on capital raising activities of new commercial launch companies. Kistler is seeking -- and must seek -- investment financing on international capital markets. The proposed definition of US commercial launch provider has raised and will continue to raise questions in the investment community about whether Kistler will remain eligible to compete for US government launch business. Moreover, if Kistler stock is in the future traded on a public exchange, Kistler will encounter difficulty establishing the ownership share stipulated in the proposed definition. The proposed definition of US commercial launch provider appears to be drawn from eligibility requirements for special cooperative research and development activities. Kistler urges Congress to revise this definition to link eligibility to the definitions of US operators used in the commercial space law and other regulatory regimes directed at the commercial space context.

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Kistler welcomes this opportunity to comment on the proposed amendments to the commercial space law. We remain ready to work with Congress in the development of these important provisions.